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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/541,194

06/30/2005

Bertus Noordam

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NIXON & VANDERHYE, PC

901 NORTH GLEBE ROAD, 11TH FLOOR

ARLINGTON, VA 22203

EXAMINER

LAU, JONATHAN S

ART UNIT

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4173

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/541,194

Applicant(s)

NOORDAM ET AL.

Examiner

Jonathan S. Lau

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Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6-15 and 20-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6-15 and 20-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SI/08)
Paper No(s)/Mail Date 2 pgs/ 21 Jul 2005
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

This application is the national stage entry of PCT/EP04/00658, filed 23 Jan 2004; and claims benefit of foreign priority document EPO 03075255.4, filed 27 Jan 2003.

Claims 6-15 and 20-29 are pending in the current application. Claims 6-15 and 20-29 are examined on the merits herein.

Election/Restrictions

Applicant's election of the invention of Group II, claims 6-15, in the reply filed on 21 Nov 2007 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

As claims 1-5 and 16-19, drawn to the inventions of Group I and III have been canceled, the restriction requirement has been rendered moot.

Applicant's election of species of enzymatic treatment as a starting point for the examination process in the reply filed on 21 Nov 2007 is acknowledged.

Specification

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

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As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

The disclosure is objected to because of the following informalities: As recited above, the specification should contain sections corresponding to (g) BRIEF SUMMARY OF THE INVENTION and (i) DETAILED DESCRIPTION OF THE INVENTION. As disclosed, it is unclear what part of the text of the section "Description of the invention" corresponds to section (g) or (i).

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 6, 8-13 and 20-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanekawa et al. (US Patent 4,303,680, issued 1 Dec 1981, cited in PTO-892), as evidenced by Kanegae et al. (US Patent 4,810,509, issued 7 Mar 1989, cited in PTO-892), as evidenced by Chae et al. (Bioresource Technology, 2001, 76, p253-258, cited in PTO-892), and in view of Keller et al. (US Patent 4,623,723, issued 18 Nov 1986, cited in PTO-892).

Tanekawa et al. discloses a process for producing a flavoring composition containing 5'-ribonucleotides (Tanekawa et al. column 2, lines 9-10) comprising (i)

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treating yeast cells to release cell contents comprising RNA (Tanekawa et al. column 2, lines 13-16), (ii) extracting the RNA present in the released cell contents (Tanekawa et al. column 2, lines 18-20), and (iii) converting the separated RNA into 5'-ribonucleotides (Tanekawa et al. column 2, lines 21-25), addressing instant claim 6. Tanekawa et al. discloses treating the yeast cells to release cell contents comprising RNA by autolysis or hydrolysis using enzymes is a conventional method (Tanekawa et al. column 1, lines 25-30), and Kanegae et al. explains that autolysis involves the action of proteases (Kanegae et al., column 3, line 39), addressing instant claims 8, 9 and 25. Tanekawa et al. discloses removal of insoluble solid material originating from the cells by methods such as centrifugation and filtration after extraction of RNA from the cell and prior to converting the separated RNA into 5'-ribonucleotides (Tanekawa et al. column 4, lines 13-18), addressing instant claims 10 and 11. Tanekawa et al. discloses using a 5'-phosphodiesterase to hydrolyze the separated RNA into 5'-nucleotides (Tanekawa et al. column 4, lines 19-20) as well as deaminase (Tanekawa et al. column 4, line 25), addressing instant claims 13, 26 and 27. Tanekawa et al. discloses the preferred yeast cells are *Saccharomyces cerevisiae* (Tanekawa et al. column 3, lines 4-5), addressing instant claims 28 and 29. Tanekawa et al. discloses an example in which the composition produced comprises more 5'-GMP (0.78%) than the sum of 5'-IMP and 5'-AMP, enzymatically converted to 5'-IMP (0.7 %) (column 7, lines 38-40), addressing instant claim 24. Tanekawa et al. is silent as to the glutamate content of the yeast extract. Chae et al. explains that yeast extract prepared by a combination of protease, 5'-phosphodiesterase, and deaminase inherently contains 25.9% amino acids on a solid

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weight basis (Chae et al. page 257, left column, lines 26-29 and 33-35), and the amino acids composition is 7.80% glutamic acid (Chae et al. page 257, right column, table 3, entry "Glutamic acid"), giving a composition that comprises 2.02% w/w of glutamate, addressing instant claim 23.

Tanekawa et al. does not specifically disclose separating the RNA present in the released cell contents from other soluble cell material (instant claim 6, step (iii)) in the process of extracting the RNA present in the released cell contents (Tanekawa et al. column 2, lines 13-16). Tanekawa et al. does not specifically disclose the removal of solid material originating from the cells prior to separating the RNA present in the released cell contents from other soluble cell material (instant claims 10 and 11). Tanekawa et al. does not disclose the process wherein the composition comprises at least 75% w/w of 5'-ribonucleotides (instant claims 20-22).

Keller et al. teaches aqueous cell extracts containing nucleic acids (Keller et al. column 1, lines 5-17), corresponding to the RNA extract disclosed by Tanekawa et al., filtered to separate deoxyribonucleic acid in the nucleic acids solution from ribonucleic acid in the nucleic acids solution by an ultrafiltration process (Keller et al. column 2, lines 58-65), addressing step (ii) of instant claim 6 and instant claim 12. Example 8 in US Patent 4,206,243, referred to in Keller et al. column 2, lines 53-55 and excerpted here:

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EXAMPLE 8

Candida lipolytica ATCC 20383, a hydrocarbon-utilizing yeast species, was cultivated on n-paraffins in the presence of an aqueous nutrient medium and an oxygen-containing gas. The yeast cell mass was separated from the nutrient solution and dried.

100 g of the dry yeast cell mass were suspended at room temperature under normal pressure in 300 g of methanol and 10 g of gaseous NH_3 were added to this mixture within 15 minutes, the temperature of the suspension being maintained at 15° C. by cooling. After the gas was introduced, agitation was continued for another 20 minutes at 22° C., followed by filtration through a suction frit. The filter cake was mixed once thoroughly on the frit with 300 ml of methanol, then vacuum filtered. The two filtrates were combined. The solution had a yellow color and contained the lipids of the originally used cell material. Methanol and NH_3 were removed under reduced pressure (14 mm Hg).

The residue after the second filtration, consisting of the destroyed and degassed cells of the microorganism, was dried in a vacuum drying cabinet (100 mm Hg) at 40° C. for 5 hours. The thus obtained product exhibited a light color than the yeast cell mass originally used, and was odorless.

100 g of degassed and dried yeast were suspended in a solution of 1 liter of distilled water and 1000 ml of methanol, in order to reduce the original nucleic acid content of 7.5 weight %, calculated on the starting material. The mixture was agitated and, at a pH of 6.8, to which it adjusted itself, was heated to 50° C. for 15 minutes. Then by centrifugation it was separated into a sediment containing the yeast protein, and a liquid phase containing nucleic acid. The sediment was subjected to vacuum freeze drying after having been washed once more at room temperature.

The nucleic acid content of the dry material had diminished from the original 7.5 weight % to 0.4 weight %.

teaches the removal of solid material originating from the cells prior to the filtration taught by Keller et al., addressing instant claims 10 and 11. Keller et al. further teaches the isolation of the RNA (Keller et al. column 2, lines 45-49) to give a composition that is 100% 5'-ribonucleotides, addressing instant claims 20-22. Keller et al. also teaches the enzymatic degradation of the RNA-containing permeate without isolation to give the 5'-ribonucleotides (Keller et al. column 2, lines 3-8). Keller et al. teaches 5'-ribonucleotides used as foodstuff additives are obtained by treating the aqueous cell extracts containing nucleic acids with 5'-phosphodiesterase, and that the

5'-deoxynucleotides by-products produced by DNA reacting with 5'-phosphodiesterase are difficult to separate from the desired 5'-ribonucleotides (Keller et al. column 1, lines 18-27).

It would have been obvious to one of ordinary skill in the art at the time of the invention to improve the process for producing a flavoring composition containing 5'-ribonucleotides disclosed by Tanekawa et al. with the known method taught by Keller et al. of separating the RNA present in the released cell contents from other soluble cell material. Both Tanekawa et al. and Keller et al. disclose production of 5'-ribonucleotides as a foodstuff additive, and Keller et al. teaches that it is desirable that the process be improved by separating the RNA present in the released cell contents from other soluble cell material prior to converting the separated RNA into 5'-ribonucleotides (Keller et al. column 1, lines 18-27).

Claim 6, 7 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanekawa et al. (US Patent 4,303,680, issued 1 Dec 1981, cited in PTO-892) in view of Keller et al. (US Patent 4,623,723, issued 18 Nov 1986, cited in PTO-892) as applied to claims 6, 8-13 and 20-29 above, and further in view of Potman et al. (US Patent 5,288,509, issued 22 Feb 1994, cited in PTO-892).

Tanekawa et al. in view of Keller et al. render unpatentable a process for producing a flavoring composition containing 5'-ribonucleotides (column 2, lines 9-10) comprising (i) treating yeast cells to release cell contents comprising RNA (Tanekawa et al. column 2, lines 13-16), (ii) separating the RNA present in the released cell contents

from other soluble cell material (Keller et al. column 2, lines 58-65), and (iii) converting the separated RNA into 5'-ribonucleotides (Tanekawa et al. column 2, lines 21-25).

Tanekawa et al. in view of Keller et al. does not disclose the process wherein the native enzymes of the cell are inactivated prior to treating the cells to release the cell contents (instant claim 7).

Potman et al. teaches the process for preparing a yeast extract useful as a food flavor (Potman et al., abstract), involving the deactivation of the native enzymes of the yeast (Potman et al. column 2, lines 32-36) prior to the enzymatic degradation of the cell with a protease such as papain (Potman et al. example 1 on column 5, lines 6-14).

It would have been obvious to one of ordinary skill in the art at the time of the invention to substitute functional equivalent methods of enzymatic degradation of the cell to practice the invention of Tanekawa et al. in view of Keller et al. with the method involving the deactivation of the native enzymes of the yeast prior to the enzymatic degradation of the cell with an exogenous protease such as papain taught by Potman et al. in place of autolysis with the cell's endogenous protease with a reasonable expectation of success. Tanekawa et al. discloses treating the yeast cells to release cell contents comprising RNA by autolysis or hydrolysis using enzymes is a conventional method (Tanekawa et al. column 1, lines 25-30). Potman et al. teaches the equivalence of enzymatic degradation of the cell with an exogenous protease and autolysis with the cell's endogenous protease (Potman et al., column 2, lines 45-50).

Claims 6, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanekawa et al. (US Patent 4,303,680, issued 1 Dec 1981, cited in PTO-892) in view of Keller et al. (US Patent 4,623,723, issued 18 Nov 1986, cited in PTO-892) as applied to claims 6, 8-13 and 20-29 above, and further in view of Tsuda et al. (US Patent 4,374,981, issued 22 Feb 1983, cited in PTO-892).

Tanekawa et al. in view of Keller et al. render unpatentable a process for producing a flavoring composition containing 5'-ribonucleotides (column 2, lines 9-10) comprising (i) treating yeast cells to release cell contents comprising RNA (Tanekawa et al. column 2, lines 13-16), (ii) separating the RNA present in the released cell contents from other soluble cell material (Keller et al. column 2, lines 58-65), and (iii) converting the separated RNA into 5'-ribonucleotides (Tanekawa et al. column 2, lines 21-25).

Tanekawa et al. in view of Keller et al. does not disclose the process wherein the 5'-ribonucleotides are further purified by removal of compounds having a higher molecular weight (instant claim 14) by ultrafiltration (instant claim 15).

Tsuda et al. discloses the separation of inosine and/or guanosine by ultrafiltration of fermentation broth to remove high molecular weight substances (Tsuda et al. column 2, lines 9-15). Tsuda et al. teaches ultrafiltration is a useful method to remove both suspended solids and also soluble, high molecular weight contaminants (Tsuda et al. column 1, lines 19-30). Tsuda et al. teaches that ultrafiltration is a useful method for separating inosine and guanosine, useful as starting substances for a flavor nucleotide, from a fermentation broth, or cellular extract, containing such substances (Tsuda et al. column 1, lines 35-39).

It would have been obvious to one of ordinary skill in the art at the time of the invention to improve the invention of Tanekawa et al. in view of Keller et al. by using the known technique of Tsuda et al. to improve a similar method in the same way because of the teaching of Tsuda et al. that ultrafiltration is a useful method to remove both suspended solids and also soluble, high molecular weight contaminants (Tsuda et al. column 1, lines 19-30). Tanekawa et al. discloses a yeast extract containing flavoring nucleotides (Tanekawa et al. column 2, lines 9-10). Tsuda et al. teaches that ultrafiltration is a useful method for separating inosine and guanosine, useful as starting substances for a flavor nucleotide, from a fermentation broth, or cellular extract, containing such substances (Tsuda et al. column 1, lines 35-39). A nucleotide is a nucleoside that is phosphorylated and has a similarly low molecular weight compared to high molecular weight contaminants, and with regard to the molecular-weight based filtration methods of Tsuda et al. is a functional equivalent. Therefore to improve the invention of Tanekawa et al. in view of Keller et al. by using the known technique of Tsuda et al. to improve a similar method would have been obvious to one of ordinary skill in the art at the time of the invention.

Conclusion

No claim is found to be allowable.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan S. Lau whose telephone number is (571) 270-

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3531. The examiner can normally be reached on Monday - Thursday, 9 am - 4 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ardin Marschel can be reached on (571) 272-0718 or Cecilia Tsang can be reached on (571) 272-0562. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JSL

/Ardin H Marschel/
Supervisory Patent Examiner, Art Unit 1614